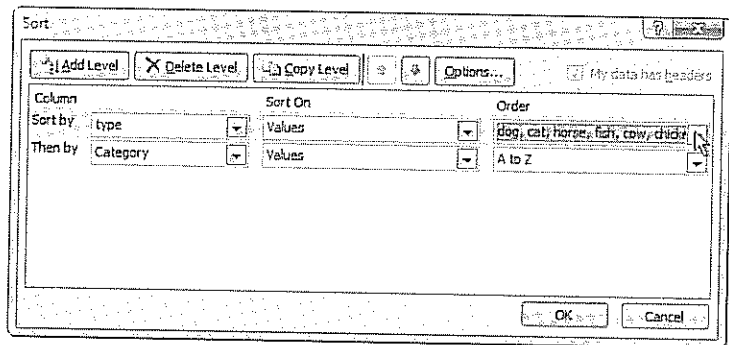


Figure 21.5
Easily sort according to
a custom list you've
created.



5. Click OK to confirm the sort order that you selected; then click OK again to perform the sort.

NOTE

By default, Excel does not distinguish between lowercase and capital letters when sorting. To change this setting, click the Options button in the Sort dialog box and check Case Sensitive. With this option enabled, Excel sorts lowercase letters ahead of capital letters.



For the first time, Excel now allows your date or custom sort to appear as any sort key, not just the first one. Feel free, for example, to search by an inventory part number and then by date.

USING FILTERS TO FIND SETS OF DATA

When working with tables, you can use the Find shortcut (Ctrl+F) to search for any value in the table. That technique is useful if you want to jump quickly to a specific unique value in the table, and it works whether your worksheet data is actually stored in a formal table with column headings or not. Instead of simple searching, however, you'll often want to extract details from a table instead of simply jumping to a single record. In that case, use filters to hide all records except those that match criteria that you specify. This is one of the biggest advantages to using data in a table format, rather than using regular worksheet data. You cannot filter worksheet data unless you've turned that data into a table with column headings. After you do that, you can filter and do far more database-related operations with your data to make your data much more useful than it would be in a regular worksheet. For example, in a table that contains hundreds or thousands of rows, defining a filter helps you see a small number of related records together, making it easier to compare data and identify trends.

Consider a table of numerous daily high, low, and closing stock prices that includes data for many companies. You might want to see only those records in which the entry in the Symbol column is equal to KO (that's the Coca-Cola Company, for those who don't know

ticker symbols by heart). Or, if you import product inventory information from a database into an Excel table, you can use filters to show only items that are currently out of stock, making it easy to build a reorder table.

AutoFilter options let you select information by choosing from drop-down tables of unique items in each column. You can also create custom filters using multiple criteria and combining criteria from multiple columns, or you can display only the top 10 (or bottom 10) entries in a table, by number or percentage, based on the contents of a single column.

NOTE

Unlike sorts, which rearrange data in a table, filters do not change the underlying data. When you define a filter, you hide records that don't match the criteria that you define.

→ For an overview of Office standard Find and Replace tools, see "Finding and Replacing Text," p. 82.

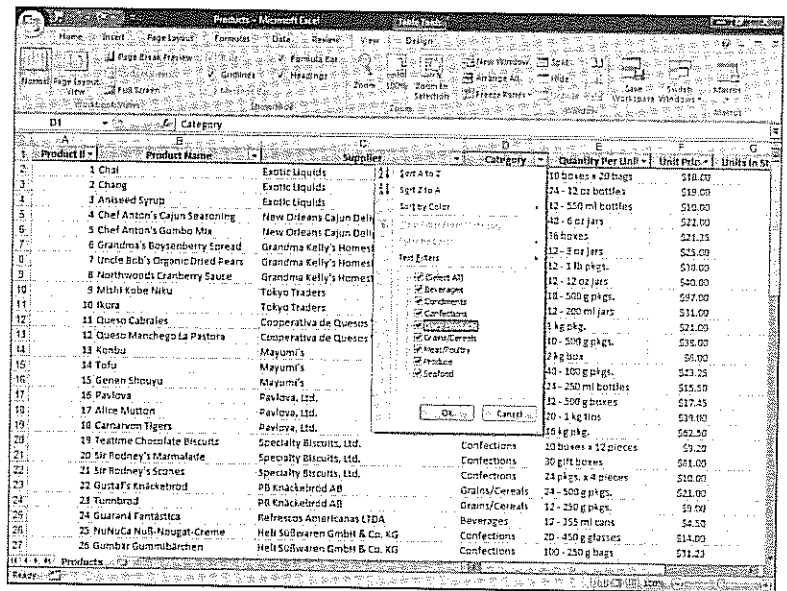
→ For details on database functions that let you analyze with data in tables, see "Database Functions," p. 618.

The easiest way to build a filter is with the help of Excel's AutoFilter capability. When this option is enabled, you can define criteria by choosing values from drop-down tables. As the name implies, an AutoFilter applies the filter to your table automatically, as soon as you select the criteria. When you understand how AutoFilters work, you can use them to narrow even massive tables.

When you define a table (by clicking inside your data and then clicking the Home ribbon's Format as Table button to transform the range to a table or by clicking the Insert ribbon's Table button to convert a worksheet to a table or create a new table), the AutoFilter option is enabled by default. For tables that are not explicitly defined, or where you have previously disabled the AutoFilter feature, you can create an AutoFilter manually by clicking anywhere in your table and clicking your Data ribbon's Filter button.

When AutoFilter is on, a drop-down arrow appears to the right of each column heading in your table, as shown in Figure 21.6. Click the arrow to the right of the column label that you want to use as the first condition in the filter.

Figure 21.6
Drop-down AutoFilter tables let you narrow your selection by choosing from all unique values in that column.



Choose an item from the drop-down table to restrict the display to only rows that contain that item, or choose any of the options shown in the following bulleted table. Excel applies your criteria immediately, filtering out all rows except those that contain the value that you selected.

NOTE

Excel generates the drop-down table of AutoFilter values for each column automatically by pulling out all unique values from that column. As a result, every item on the drop-down table is guaranteed to be in that column, making it impossible to select an incorrect value. AutoFilter tables always display in ascending order.

Depending on the type of data you filter—text or numeric, for example—the AutoFilter drop-down list includes extra filters such as Text Filters and Number Filters that provide advanced filters based on criteria you specify. Some of the more popular numeric filter choices you'll find are the following:

- **Top 10**—Show the highest or lowest numeric values in a table by number or by percentage. Don't be misled by the name—when you choose this option, you see a dialog box that lets you select any number between 1 and 500; you can choose Bottom or Top, and you can specify percent as well. Use the settings in Figure 21.7, for example, to display the top 5% of all products in a table, based on the amount in the selected column. If the table contains 2,000 items, this setting will show only the top 100.

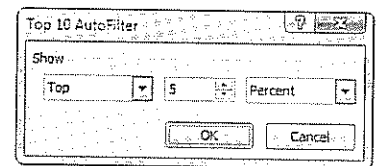


Figure 21.7



If Excel beeps or displays unexpected results when you try to use the Top 10 option, see "Top 10 Is for Numbers Only" in the "Troubleshooting" section at the end of this chapter.

- **Custom**—Use comparison operators (covered in the next section) to define criteria. You can combine up to two criteria using this option.
- **Blanks**—Display only records that contain no data in the selected column. This option is available only if the selected column contains one or more blank cells.
- **NonBlanks**—Display all records that contain data in the selected column, hiding blank records. This option is available only if the selected column contains one or more blank cells.
- **All**—Show all records in the table. Use this option to remove AutoFilter criteria from a column.

AutoFilter criteria are cumulative; by combining criteria in different columns, you can successively filter a table to display an increasingly selective group of records. Although you can choose filter criteria in any order, it's best to start with columns that include the fewest options because the table of choices for succeeding columns will be narrower and easier to scroll through.

When you apply a filter to a table, Excel changes the drop-down arrow to include a funnel icon on the column that you selected to filter. That is your only indication that a particular column is filtered. As the table in Figure 21.8 shows, Excel maintains the row numbers of the underlying table when you use an AutoFilter, hiding all rows that don't match the criteria that you specified.

Figure 21.8
Because an AutoFilter does not change the data in the underlying table, you'll see gaps in row numbering when you filter a table.

Product ID	Product Name	Supplier	Category	Quantity Per Unit	Unit Price	Units in Stock
1	Chai	Exotic Liquids	Beverages	10 boxes x 10 bags	\$18.00	
2	Lemon Syrup	Exotic Liquids	Condiments	12 - 350 ml bottles	\$18.00	
3	Aniseed Syrup	Mayumi's	Condiments	24 - 250 ml bottles	\$23.50	
10	Genen Shoyu	Mayumi's	Condiments	12 - 500 g bottles	\$17.45	
11	Pavlova	Pavlova, Ltd.	Confections	24 pkgs. x 4 pieces	\$10.00	
12	16 Pavlova	Specialty Biscuits, Ltd.	Confections	20 - 450 g glasses	\$14.00	
13	23 TuftuTuCa Nut-Hungry-Creme	Hell's Suburban GmbH & Co. KG	Dairy Products	12 - 100 g pkgs	\$12.25	
14	31 Gorgonzola Telling	Fornaggi Fattini S.r.l.	Dairy Products	24 - 12 oz bottles	\$14.00	
15	34 Salsavatchale	Bigfoot Breweries	Beverages	24 - 12 oz bottles	\$18.00	
16	35 Steelene Stout	Bigfoot Breweries	Beverages	750 cc per bottle	\$18.00	
17	38 Chartreuse verte	Aux joyeux ecclésiastiques	Beverages	32 - 1 kg pkgs.	\$14.00	
18	42 Singaporean Hokkien Fried Mien	Leka Trading	Grains/Cereals	10 pkgs.	\$12.75	
19	46 Spaghettil	Lymphysilid	Seafood	12 - 100 g bars	\$16.25	
20	48 Chocolate	Zaanse Snoepfabriek	Confections	24 pkgs.	\$13.25	
21	50 Valkoinen suklaa	Karkki Oy	Confections	24 - 100 g jars	\$17.00	
22	58 Estargots de Bourgogne	Escargots Nouveaux	Seafood	24 - 12 oz bottles	\$14.00	
23	56 Louisiana Hot Sauce OKra	New Orleans Cajun Delights	Condiments	10 boxes x 6 pieces	\$12.50	
24	57 Laughing Lumberjack Lager	Bigfoot Breweries	Beverages	24 - 350 ml bottles	\$15.00	
25	58 Scotch Longbreads	Specialty Biscuits, Ltd.	Confections	24 - 120 g jars	\$10.00	
26	70 Outback Lager	Pavlova, Ltd.	Beverages	5 kg pkgs.	\$10.00	
27	71 Rod Caver	Svenik Snijders AB	Produce	500 ml	\$18.00	
28	74 Longlife Tofu	Tokyo Traders	Beverages	12 boxes	\$13.00	
29	75 Larkkikikis	Karkki Oy	Condiments			
30	77 Original Frankfurter grüne Soße	Plutzer Lebensmittelgroßmärkte AG	Condiments			

To change AutoFilter criteria, click the filter icon on the column heading to open the filter options for that column again and select another value. To remove AutoFilter criteria for a single column, choose *Clear Filter from Heading* (where *Heading* is the title on your column heading). To remove all AutoFilter criteria from the table as you might want to do if you've filtered multiple columns and no longer want to do so, click the *Clear* button on the *Data* ribbon. The drop-down arrows disappear from all column headings.

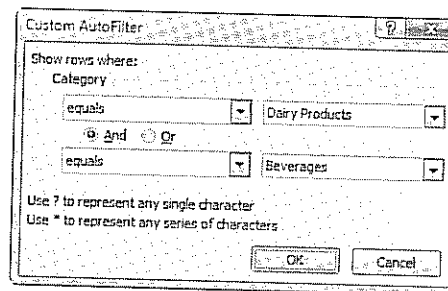
Excel does not automatically retain custom sets of AutoFilter criteria. When you save a worksheet that contains an AutoFiltered table, your table appears with AutoFilter settings intact when you reopen it. However, as soon as you choose a different AutoFilter option for a column (or disable the AutoFilter option completely), Excel discards any custom criteria that you've created for that column. To reapply those same AutoFilter criteria, you have to create a custom view or reenter the criteria.

USING COMPARISON CRITERIA TO CREATE CUSTOM FILTERS

The drop-down AutoFilter table for each column allows you to select one and only one specific value. In some cases, that limitation gets in the way of finding the information that you need. For example, what if you want to search through your product table and find all items whose price is less than \$10? Or, what if you want to find items whose name includes the text "puppy"? To create complex criteria in an AutoFiltered table, click the *Filters* option to display the filter options and select *Custom Filter* from the list that appears.

The Custom AutoFilter dialog box (see Figure 21.9) enables you to use any of the following *comparison operators*:

Figure 21.9
Use the Custom AutoFilter dialog box to combine criteria; if you need more than two criteria, use an Advanced Filter instead.



- Equals/does not equal
- Is greater than/is less than
- Is greater than or equal to/is less than or equal to
- Begins with/does not begin with
- Ends with/does not end with
- Contains/does not contain

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AutoFilter criteria for a
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er criteria, you have to

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se any of the following

You can also combine two criteria for a single column using the logical operator AND, or use the OR operator to tell Excel that you want to see records that match either of the criteria that you specify for that column.

Select a comparison operator for the first criterion, and then click in the box to the right of the comparison operator and enter the value that you want to use as a logical test. Or, use the drop-down table to select from all unique values in the column. If you add a second criterion for the same column, click And to select only rows in which both criteria are true; click Or to create a filter that shows rows in which either set of criteria is true.

TIP FROM

EQ & Woody

Although you're limited to only two criteria when you use AutoFilter's Custom option, you can easily work around this limitation by using Excel's capability to filter on criteria for two or more columns at once. Make a copy of the column that you want to use in your filter, and specify a separate set of criteria in the AutoFilter box for that column.

FILTERING WITH ADVANCED CRITERIA

Compared with the one-click ease of AutoFilters, Excel's advanced filters are downright cumbersome. Still, they're the only way to accomplish some tasks, such as defining more than three criteria for a single column or finding only unique values within a table that contains duplicate entries. Advanced filters also let you specify more complex criteria than you can use with AutoFilters, including criteria based on formulas.

To use advanced filters, start by creating a *criteria range* on the same worksheet that contains the table. Criteria are conditions you set which limit what table records will appear in your worksheet. You might, for example, wish to create a criteria so that only rows with inventory quantities below 5 show up for a reordering report. Although you can add this range anywhere on the table, we strongly recommend that you place it directly above the table, where it's unlikely to be affected by any changes that you make to the sheet's design. Allow a minimum of three rows in the criteria range—one for the column labels, one for the criteria, and one to serve as a separator between the table and the criteria range.

TIP FROM

EQ & Woody

Add one extra row for each set of criteria that you expect to use when filtering the table. In almost all circumstances, you can get by with a criteria range of five rows, which allows you to add up to three sets of criteria for each column while still maintaining a one-row separation between the criteria range and the table.

Copy the column labels from the table to the first row of the criteria range. The resulting range should look something like the example shown in Figure 21.10, which also includes several criteria.

Figure 21.10
Always create the criteria range above the table, not below or alongside it; that placement keeps it from being scrambled when you extend or sort the table.

Product ID	Product Name	Supplier	Category	Quantity Per Unit	Unit Price	Units In Stock	Units On Order
1	Chai	Exotic Liquids	Beverages	10 boxes x 20 bags	\$18.00	39	
2	Cham	Exotic Liquids	Beverages	24 - 12 oz bottles	\$19.00	17	
3	Aniseed Syrup	Exotic Liquids	Condiments	12 - 150 ml bottles	\$10.00	13	
4	Chief Antoin's Cajun Seasoning	New Orleans Cajun Delights	Condiments	48 - 6 oz jars	\$22.00	53	
5	Chief Antoin's Gumbo Mix	New Orleans Cajun Delights	Condiments	16 boxes	\$21.15	0	
6	Grandma's Boysenberry Spread	Grandma Kelly's Homestead	Condiments	12 - 8 oz jars	\$25.00	120	
7	Uncle Bob's Organic Dried Pears	Grandma Kelly's Homestead	Produce	12 - 1 lb pkgs.	\$30.00	15	
8	Northwoods Cranberry Sauce	Grandma Kelly's Homestead	Condiments	12 - 12 oz jars	\$40.00	5	
9	Mishi Kobe Niku	Tokyo Traders	Meat/Poultry	16 - 500 g pkgs.	\$37.00	29	
10	Ikaara	Tokyo Traders	Seafood	12 - 250 ml jars	\$31.00	31	

→ For more details on working with named ranges, see "Using Named Ranges in Formulas," p. 601.

Begin entering criteria in the row just below the column labels. You can enter text, numbers, dates, or logical values using comparison operators such as > and <. To find values that are greater than or equal to a specific value, use the >= operator. For example, >=1000 finds all values greater than or equal to 1000 in the specified column; in a text column, <C finds all entries that begin with A or B.

You can enter values in more than one column and in more than one row. When you do, Excel interprets your input as follows:

- For values in more than one column within a single row, Excel looks for records that match all values that you specify in the row, the equivalent of a logical AND.
- For values in the same column in separate rows, Excel displays records that match any of the values, the equivalent of a logical OR.

In essence, each row in the criteria range equals a single *condition*. By mixing and matching conditions, you can filter a table in different ways, including the following:

- **Multiple conditions for one column**—Enter each condition in a separate cell under the column label in the criteria range. In the example shown in Figure 21.11, any row containing the value Beverages, Condiments, or Confections in the Category column will match.
- **One condition in each of several columns**—Enter each condition under its respective column label in the same row. The example in Figure 21.12 will match rows in which the value in the Category column is Beverages and the price is more than \$10. Generally, this type of filter is much easier to apply using an AutoFilter.

Category
Beverages Condiments Confections

Figure 21.11

Category	Quantity Per Unit	Unit Price
Beverages		>10

Figure 21.12

■ Multiple conditions in multiple columns—

Enter each set of conditions in its own row of the criteria range, and Excel will find rows in the table that match either set. Figure 21.13 finds any item in the Beverages category whose price is more than \$10, or any item in the Confections category whose price is greater than \$20. This type of condition is nearly impossible to match with an AutoFilter.

Category	Quantity Per Unit	Unit Price
Beverages		>10
Confections		>20

Figure 21.13

HELP FROM

EQ & Woody

To specify multiple criteria for the same column in the same row, add another column heading in the criteria range, using the same column label (extend the criteria range, if necessary, or replace the label for an existing column for which you're not defining conditions). For example, if you have a column called Amount, add a second column label, also called Amount, to your criteria range. Then, when you enter >3000 in one cell and <6000 in the other, both in the same row, Excel finds only records in which the Amount is between 3000 and 6000.

CAUTION

If you enter text in a criteria range, Excel finds all matching records that begin with that text. Thus, if you enter the letter F under the Category label, Excel finds all records whose category begins with F. To find only records that match the exact text that you specify, you must enter the value using the following format: `"=text"` (where *text* is the value you want to use in your condition). Make sure to include both equal signs.

Finally, you can create conditions based on formulas. Although formulas can be a powerful way to filter a table, they are extremely challenging to enter, and the syntax is confusing. Unlike other conditions, which must appear under a label in the criteria range that matches the corresponding label in the table, you must not use a column label with a formula. Enter the formulas in a cell beneath a blank label, or change the label above it so that it does not match a label in the table. Individual references in the formula should come from the column label or the first record of the table, and the formulas must evaluate to TRUE or FALSE.

In the example in Figure 21.14, note that we've changed the label in cell F1 to read Price Per from Unit Price that appears in the table. As you can see from the formula bar, the formula in cell F2 multiplies the quantity in the Unit Price column by the value in the Units in Stock column for the first row of the table (F7*G7) to see whether it's greater than 300.

Figure 21.14

The formula in cell F2 contains relative references to values in the first row of the database (row 7); note that the label above it does not match a label in the table itself.

Product ID	Product Name	Supplier	Category	Quantity Per Unit	Unit Price	Units in Stock
1	Chat	Exotic Liquids	Beverages	10 boxes x 10 bags	\$10.00	29
2	Chang	Exotic Liquids	Beverages	24 - 12 oz bottles	\$10.00	17
3	Aniseed Syrup	Exotic Liquids	Condiments	12 - 500 ml bottles	\$10.00	13
4	Chef Anton's Cajun Seasoning	New Orleans Cajun Delights	Condiments	40 - 6 oz jars	\$21.00	53
5	Chef Anton's Gumbo Mix	New Orleans Cajun Delights	Condiments	30 boxes	\$21.35	0
6	Grandma's Boysenberry Spread	Grandma Kelly's Homestead	Condiments	12 - 8 oz jars	\$25.00	120
7	Uncle Bob's Organic Dried Pears	Grandma Kelly's Homestead	Produce	12 - 1 lb pags	\$30.00	15
8	Northwoods Cranberry Sauce	Grandma Kelly's Homestead	Condiments	12 - 12 oz jars	\$42.00	6
9	Toku Kobe Nikar	Tokyo Traders	Meat/Poultry	18 - 500 g pkgs	\$97.00	29
10	Iura	Tokyo Traders	Seafood	12 - 200 ml jars	\$21.00	31

After you've created the criteria range and entered criteria, apply the filter to your table by following these steps:

1. Click the Data ribbon's Advanced button to display the Advanced Filter dialog box (shown in Figure 21.15). Note that the values shown here correspond to values in Figure 21.16.
2. If the List Range option isn't set to your entire table (the word *list* is a carryover from previous Excel versions where tables were called lists), click the List Range box and then select the entire table, including the header row. (If you selected the table before opening the Advanced Filter dialog box, this range is already selected.)
3. If the Criteria Range option isn't set to your criteria range, click in the Criteria Range box and select the portion of the criteria range that contains data. At a minimum, this must include one column label and one cell beneath that label. If your criteria include multiple rows, make sure that you select each row. The portion of the criteria range that you select must be a contiguous range.

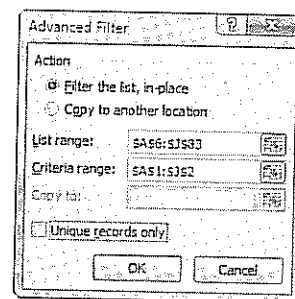


Figure 21.15



If your advanced filter doesn't work as you expect, see "Debugging Advanced Filters" in the "Troubleshooting" section at the end of this chapter.

4. Choose a destination for the Advanced Filter results:
 - To filter the table in place, as an AutoFilter does, accept the default option under Action.
 - To extract records to another location, click the Copy to Another Location option; then click in the Copy To box and select the cell at the top-left corner of the range where you want the extracted records to appear (logically, this location is called the *extract range*). This location must be on the same worksheet as the table itself; if you want to extract specific fields, you must include column labels that correspond to the fields you want to extract. You do not need to extract every column from the table.

- To filter out duplicate records, select the Unique Records Only check box. If you filter the table in place, this option excludes those rows in which the values in every column are identical. If you extract the results to a new location and specify a subset of columns, Excel defines duplicates based only on the columns in the extract range.

TIP FROM

EQ & Woody

By extracting unique records, you can quickly build a table of categories from a much larger table like the one in the examples shown here. Use no conditions in the criteria range. For the extract range, pick a cell below the table and enter the label of the column that you want to extract (Category, in this case). When you run the Advanced Filter, Excel displays a table of all the unique values in your Category column, with no duplicates.

5. Click OK to apply the filter.

TIP FROM

EQ & Woody

Use range names to skip some steps in this process. If you create named ranges called Database and Extract, Excel automatically selects them in the Advanced Filter dialog box each time you use it. Excel automatically creates a named criteria range each time you use the Advanced Filter dialog box.

Advanced filters don't update automatically when you enter new values in the criteria range. To apply the new criteria, you need to reopen the Advanced Criteria dialog box and click OK. To remove an in-place filter from a table, click the Clear button on your Data ribbon.

IMPORTING AND EXPORTING DATA



Using Excel, you can create a table using data from a *text file* or Access database, a SQL Server, non-Access and non-SQL database files, as well as from the web using commands on your Data ribbon. Because you can now export a file directly from Microsoft Access to the Excel 2007 format, importing from a text file requires more explanation than does importing from an Access database in most cases. Importing data from the Web requires a little extra work, and you'll learn about that in a later section titled "Creating and Using Web Queries."

A text file is often used as the go-between file for moving data between programs. One program, such as Outlook, might export its data to a text file so that Excel can import that data—Excel cannot import Outlook data directly.

Excel can also save a table to a text file. By exporting to a text file, other programs such as Outlook can read the worksheet data you've prepared.

To import a text file as a table, first position the insertion point in the cell where you want the data to appear. Make sure that no data appears below or to the right of the location that you select, or it could be overwritten. Then follow these steps:

1. Display your Data ribbon and click From Text from the Get External Data group.
2. In the Import Text File dialog box, select the file that you want to import, and click Import. The Text Import Wizard appears.

- To filter out duplicate records, select the Unique Records Only check box. If you filter the table in place, this option excludes those rows in which the values in every column are identical. If you extract the results to a new location and specify a subset of columns, Excel defines duplicates based only on the columns in the extract range.

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- Click OK to apply the filter.

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